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An Investigation of Global and Regional Integration of ASEAN Economic Community Stock Market: Dynamic Risk Decomposition Approach

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ABSTRACT

This article investigates the dynamic pattern of stock market relations between the ASEAN Economic Community (AEC) and two major stock markets: China and the United States. A GARCH risk decomposition model is developed to reflect the time-varying market integration. The primary findings of this study are as follows. First, the AEC is more integrated with the regional stock market than with the global stock market. Second, the movement in the AEC stock market is mainly driven by domestic economic situations. Third, external shocks only affect the level of integration of the AEC temporarily. Finally, international investors are able to significantly reduce unsystematic risk by adding an AEC market portfolio into their existing portfolios.

KEY WORDS:

AEC | diversification | dynamic risk decomposition | market integration

Previous article | View issue table of contents | Next article

Notes

1. The ASEAN is a political and economic organization of ten countries located in Southeast Asia, which was formed on August 8th 1967 by Indonesia, Malaysia, the Philippines, Singapore and Thailand. Since then, membership has expanded to include Brunei, Burma (Myanmar), Cambodia, Laos, and Vietnam. As of 2014, the aggregated GDPs of NAFTA and EU are $20.5 and $18.5 trillion USD, respectively.

2. For the effect of common market on the regional economy, see Pagano (1993), Akdogan (1996, 1997), Levine and Zervos (1998), Levine (2002), Prasad et al. (2003), Baele et al. (2004), and Bartram, Taylor, and Wang (2007).

3. See Ba (2003).

4. See Alexander (1994).

5. We selected the order at 2 based on Portmanteau Q test. It is well known that the lag order 2 best explains the dynamic structure of multivariate time series in most cases (Juselius 2006). A univariate GARCH (1,1) model is used for variance equation since the model was not converged with the other lag lengths and/or with the multivariate model.

6. We used World Bank, Yahoo/Finance, Datastream, and Bloomberg as the source of the data for market capitalizations that change over time. The index weighted by the yearly average market value was due to the non-availability of high-frequency weighed data. Consequently, the weighted index used in this article can be a biased estimator of daily weighted index. We decided to use the stock markets of the five major ASEAN countries to simulate the AEC stock index due to the famous infrequent trading problem of excluded stock markets. Specifically, the stock exchange does not exist in Myanmar and in Brunei. For Cambodia and Laos, the history of the exchanges is too short, and the number of listed companies is very small (2 in Cambodia and 4 in Laos). For Vietnam, the market capitalization is relatively small (about 10 percent of Malaysia, of

Thailand, and of Philippines, about 5 percent of Singapore and of Indonesia, and about 1.5 percent of the ASEAN major-5's total).

[7.] We performed the same test with different lags and without trends, and the results do not lead to any different conclusions. We employed automatic lag length selection using a Schwarz Information Criterion (SIC), and the maximum lag length is automatically determined by the lag length parameter methods proposed by Ng and Perron (2001). For the PP test, we used Newey-West (1994) data-based automatic bandwidth parameter methods for the kernel estimation in order to select the bandwidth.

[8.] T-GARCH or E-GARCH can be used for non-normal data series. However, Cappiello, Engle, and Sheppard (2006) suggest that any univariate GARCH process that is covariance stationary and assumes normally distributed errors (irrespective of the true error distribution) can be used to model the variances in DCC model and, therefore, the assumption of conditional normality is not crucial. In many cases, the basic GARCH conditional variance Equation (3) under normality provides a reasonably good model for analyzing financial time series and estimating conditional volatility (Zivot 2009). Nonetheless, we tried various GARCH model including multivariate GARCH model. However, these models failed to converge for the data series of this article.

[9.] See Bekaert and Harvey (1995), Barari (2004), Ratanapakorn and Sharma (2002), Phylaktis and Ravazzolo (2005).

[10.] Empirical evidence of the biased optimal portfolio is well documented in the following studies: Michaud (1989), Best and Grauer (1991), Chopra and Ziemba (1993), Cha and Jithendranathan (2009), and Gupta and Donleavy (2009).